

Remarks/Arguments:

By this Amendment, applicants have amended claims 1 and 39. Claims 1, 32, 33, 35-37, 39, 42, 46, 50, and 56-58 are pending.

Claim Rejections Under Section 102

Claims 1, 32, 33, 35-37, 39, 57, and 58 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Diamantopolous. By this Amendment, applicants respectfully traverse the Section 102(b) rejection.

Claim 1 is an independent claim to which all of the other pending claims depend either directly or indirectly. Independent claim 1 is directed to a radiant energy radiation apparatus and includes the following elements:

- an artificial radiation source including:
 - **means for providing radiation in a visible wavelength range as illumination with a deviation (duv) of the chromaticity of light from a Planckian locus in Commission Internationale de l'Eclairage (CIE) 1960 UCS Chromaticity diagram within ± 0.01, and**
 - means for providing radiation in a predetermined wavelength range of 600 nm to 1100 nm for the purpose of permeating into an organism to maintain/promote biofunctions of the organism,
 - wherein on an irradiated plane irradiated with the radiation in the predetermined wavelength range of 600 nm to 1100 nm, an irradiance at a wavelength in the predetermined wavelength range of 600 nm to 1100 nm is 0.1 W/m² or more, and
 - in the irradiated plane, radiant energy of radiation at a wavelength in a range of 1100 nm to 2.5 µm is greater than zero and smaller than radiant energy of radiation at a wavelength in the range of 600 nm to 1100 nm, and
 - wherein the means for providing radiation in a visible wavelength range and the means for providing radiation in a predetermined wavelength range of 600 nm to 1100 nm are provided concurrently.

Applicants contend that the radiant energy radiation apparatus defined by claim 1 is patentably distinguished from the Diamantopoulos Patent at least based on the requirement of means for providing radiation in a visible wavelength range as illumination with a deviation (duv) of the chromaticity of light from a Planckian locus in Commission Internationale de l'Eclairage (CIE) 1960 UCS chromaticity diagram within ± 0.01 (hereinafter generally referred to as the "Visible Wavelength Radiation Means Feature" of applicants' claimed invention). In other words, the Visible Wavelength Radiation Means Feature is neither taught nor suggested in the Diamantopoulos Patent.

The Visible Wavelength Radiation Means Feature as amended in claim 1 is not the addition of new matter, but is based on the application as originally filed. In this connection, applicants directed the Examiner's attention to page 31, line 26 to page 32, line 19 of the originally filed application. It is applicants' further contention that the Visible Wavelength Radiation Means Feature also provides an advantage to applicants' claimed radiant energy radiation apparatus which is neither anticipated nor appreciated by the Diamantopoulos Patent.

The Office Action at the bottom of page 2 and continuing to page 3, takes the position that there is "no specific definition of the term 'illumination'". Applicants have by the above noted amendment more clearly defined what is meant by "illumination" in applicants' claimed invention. As more specifically defined, applicants' invention is neither anticipated nor obvious in view of the Diamantopoulos Patent.

Applicants also note that the above-noted amendment to claim 1 is also based in-part on claim 39 which has also been amended.

Applicants contend that the radiant energy radiation apparatus of claim 1 includes a feature neither anticipated by nor obvious from the Diamantopoulos Patent; namely, means for providing radiation in a visible wavelength range as illumination with a deviation (duv) of the chromaticity of light from a Planckian locus in Commission Internationale de l'Eclairage (CIE) 1960 UCS chromaticity diagram within ± 0.01. This specifically defined illumination is simply not found in the Diamantopoulos Patent. The Diamantopoulos Patent merely discloses using visible light of 660 nm which cannot be used as illumination within a duv of within ± 0.01 as defined in applicants' claim 1. Light in the 660 nm wavelength range as disclosed in the Diamantopoulos Patent is in the red part of the spectrum, and to assist the Examiner in this respect, applicants have included an Attachment A which is a CIE chromaticity diagram which

shows as point "I" thereon the visible light of 660 nm as disclosed in the Diamantopoulos Patent. Thus as is apparent from Attachment A, the Diamantopoulos Patent with its disclosure of visible light of 660 nm cannot teach or suggest that the light source has a duv within ± 0.01 as defined in applicants' claim 1. Applicants therefore contend that the Visible Wavelength Radiation Means Feature of applicants' claimed invention is lacking in the Diamantopoulos Patent.

Applicants explain in the originally filed application at page 32, lines 21-33, that the problem with using a light source outside of the range of + 0.01 to - 0.01 is that the difference between the color of light and that of ordinary lighting will be substantial, and thereby result in an increased discomfort for certain living environments or certain people. And the associated stress of using such a light source can lower the NK cell activity of an organism, which is in sharp contrast to the goal of applicants' claimed invention.

The light source provided by applicants' claimed invention is in sharp contrast to that disclosed by the Diamantopoulos Patent as further shown by Attachment B to this Amendment. Attachment B is published by the Japanese Standards Association and is entitled "Methods for Determining Distribution Temperature and Color Temperature or Correlated Light Temperature of Light Sources". The Visible Wavelength Radiation Means Feature of applicants' claimed invention requiring that the light source have a duv within ± 0.01 is shown in Attachment B as existing in a range surrounded by the bold line in the Colour Degree of Wavelength 660 nm LED graph. In this range, the light is white as from an electric light bulb and can have a duv of within ± 0.01 .

Based on the foregoing discussion, applicants therefore respectfully submit that at least based on the Visible Wavelength Radiation Means Feature, claim 1 and dependent claims 32, 33, 35-37, 39, 42, 46, 50, and 56-58 are patentably distinguished from the Diamantopoulos Patent. Applicants' request that the Section 102(a) rejection based on the Diamantopoulos Patent be withdrawn.

Claims 1, 32, 33, 36, 37, 39, 42, 46, 50, 56, and 58 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Hughes. By this Amendment, applicants respectfully traverse the Section 102(e) rejection.

Applicants' contend that the Hughes Patent does not even go so far as to define a wavelength relative to the Visible Wavelength Radiation Means feature of applicants' claim 1. The Hughes Patent in general merely discloses a bright-light portable phototherapy unit used to

Appln. No.: 09/530,060
Amendment Dated February 10, 2004
Reply to Office Action of December 29, 2003

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modify biological rhythms. But the phototherapy unit of Hughes does not rectify the deficiency discussed above with respect to the Diamantopoulos Patent, and has noted does not go so far as to define a wavelength relevant to the Visible Wavelength Radiation Means Feature of applicants' claim 1. Lacking any teaching or suggestion of the Visible Wavelength Radiation Means Feature, the Hughes Patent can neither anticipate nor render obvious the radiant energy radiation apparatus of applicants' claim 1, as well as that defined by dependent claims 32, 33, 35-37, 39, 42, 46, 50, and 56-58. Applicants therefore request that the section 102(e) rejection be withdrawn.

Based on the foregoing remarks and amendments, applicants' respectfully submit that claims 1, 32, 33, 35-37, 39, 42, 46, 50, and 56-58 are in condition for allowance. Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,

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Dated: February 10, 2004

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February 10, 2004

Jackie Jones

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drawing of CIE color degree showing with XY
coordinate coupling color range
provided by Kelly(1943)

196 第5章 フィルター性能の測定

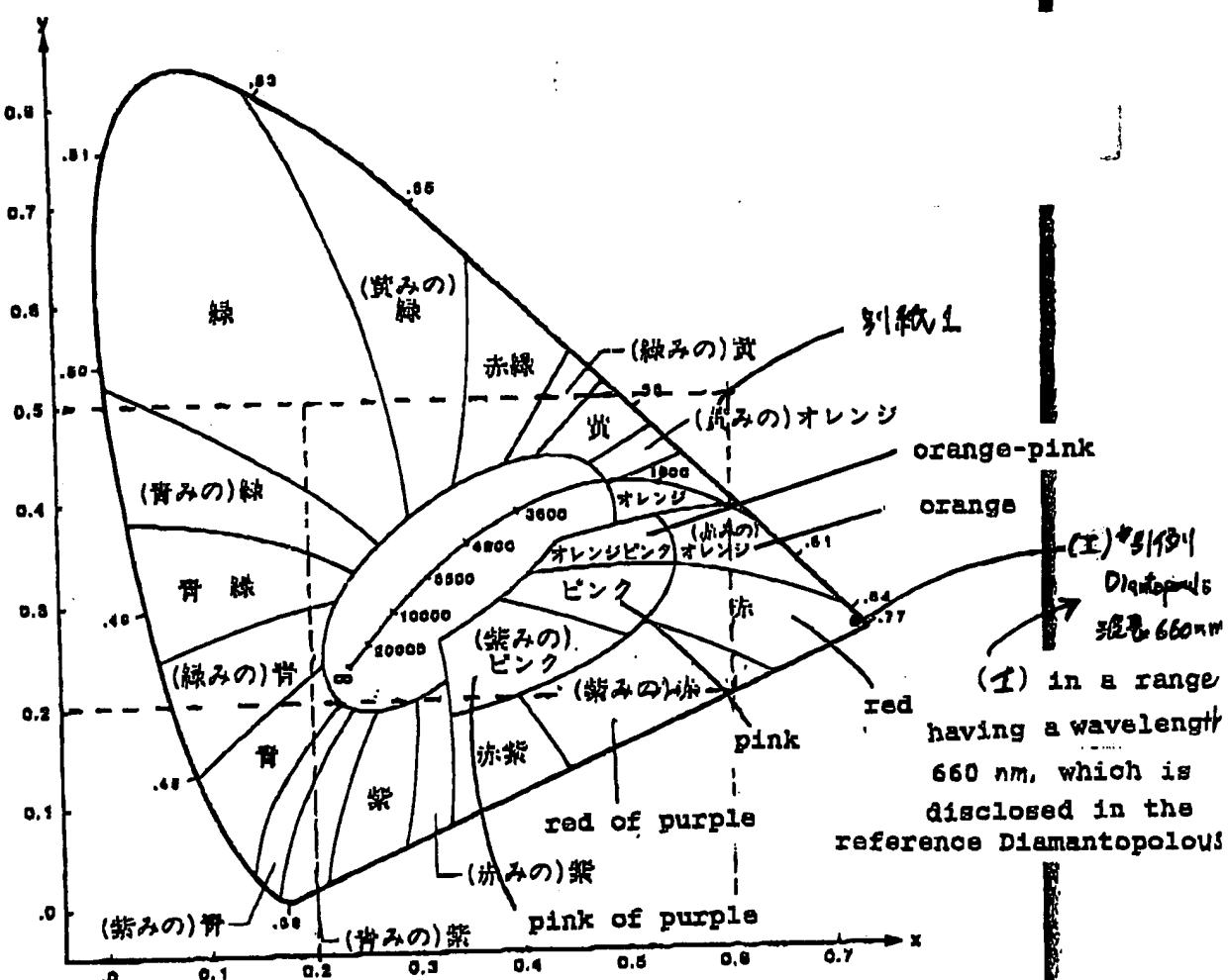


図 5.5. CIE 色度図 (1931) (写真研究チャートから引用).

ATTACHMENT A

JAPANESE INDUSTRIAL STANDARD

Methods for determining distribution temperature and color temperature or correlated color temperature of light sources

JIS Z 8725 : 1999

Revised 1999-02-20

Investigated by

Japanese Industrial Standards Committee

Published by

Japanese Standards Association

定価：本体 2,400 円(税別)

ICS 17.180.20

Descriptors : incandescent lamps, standard light source, photometers, colorimetry, temperature measurement, colour, temperature distribution

Reference number : JIS Z 8725 : 1999 (J)

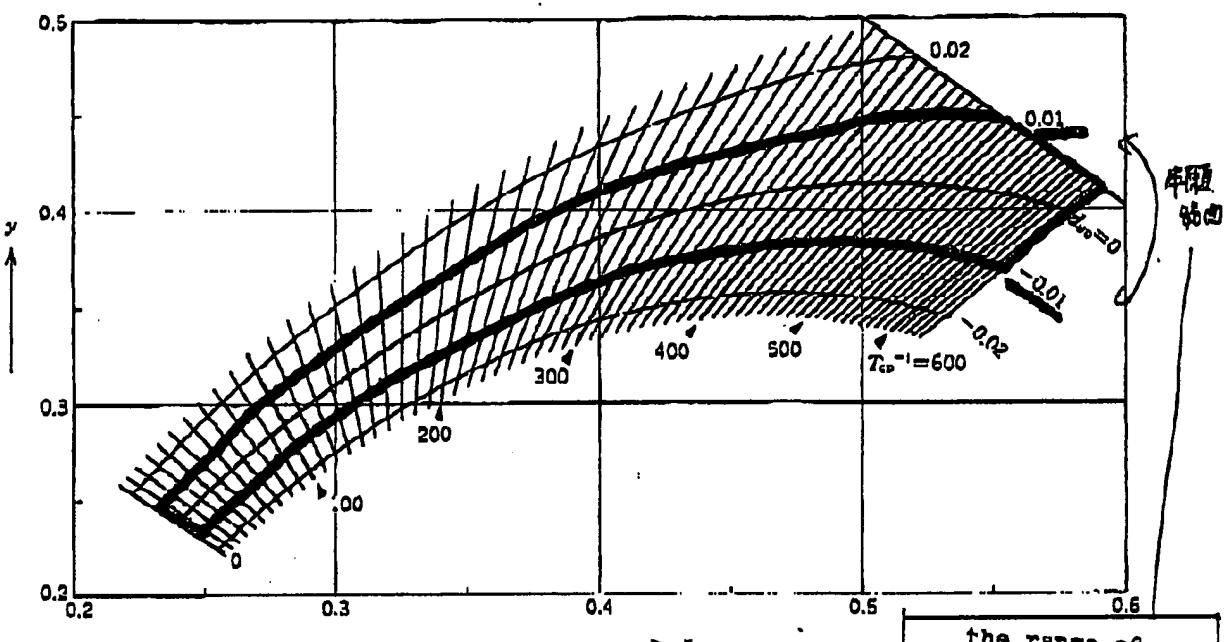
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ATTACHMENT B

color degree of wavelength 660 nm LED

付図 660 nm LED の 2A
 $x = 0.730$
 $y = 0.270$

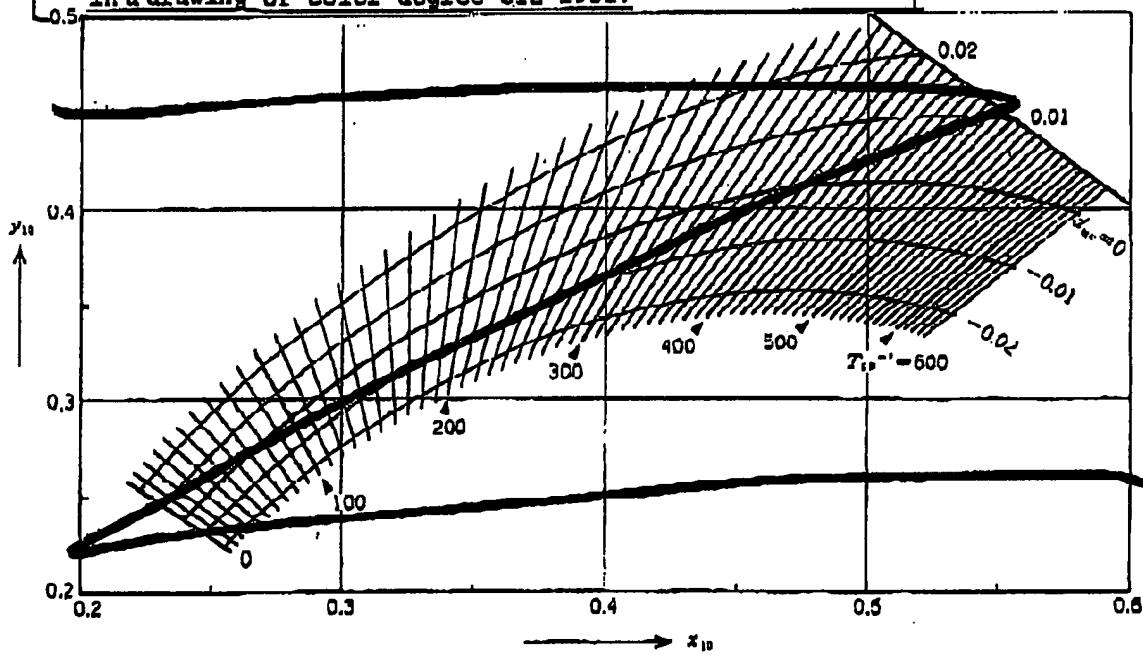
Z 8725 : 1999



付図1 CIE 1931色度圖における黒体放射軌跡及び等色温度線
 Black-body radiation orbit and color matching temperature line
 in a drawing of color degree CIE 1931.

the range of

the present invention



付図2 CIE 1964色度圖における黒体放射軌跡及び等色温度線

ATTACHMENT B